

Claims

[c1] What is claimed is:

1.A method of locating a mobile station when the mobile station is turned off, the method comprising:
turning off the mobile station while keeping a battery of the mobile station intact in the mobile station;
the mobile station entering a soft power-off mode after the mobile station has been turned off if the battery of the mobile station has sufficient energy;
at least one base station of a mobile phone network sending paging request messages for locating the mobile station;
the mobile station receiving the paging request messages from at least one base station;
the mobile station measuring Received Signal Strength Indicator (RSSI) levels for received paging request messages and the mobile station selecting a current base station for which the mobile station measures a strongest RSSI level;
handshaking between the mobile station and the current base station to enable the mobile station to camp on the current base station;
the mobile station reporting its location to the current

base station; and
the mobile phone network informing authorities of the location of the mobile station.

- [c2] 2.The method of claim 1 wherein handshaking between the mobile station and the current base station comprises:
 - the mobile station sending a location based channel request message to the base station;
 - the base station sending an immediate assignment message to the mobile station in response to receiving the location based channel request message from the mobile station;
 - the mobile station sending a location trace request message to the base station in response to receiving the immediate assignment message from the base station; and
 - the base station sending a location trace confirmation message to the mobile station in response to receiving the location trace request message from the mobile station.
- [c3] 3.The method of claim 1 wherein when the mobile station camps on a new base station that is different from the current base station, the mobile station begins handshaking with the new base station before reporting its location to the new base station.

- [c4] 4.The method of claim 3 wherein to initiate handshaking between the new base station and the mobile station, at least one base station sends paging request messages for locating the mobile station within a predetermined period of time after the mobile phone network stops receiving messages from the mobile station reporting the location of the mobile station.
- [c5] 5.The method of claim 4 wherein if the mobile station does not receive any paging request messages from at least one base station within the predetermined period of time, the mobile station sends location based channel request messages to the mobile phone network to initiate handshaking.
- [c6] 6.The method of claim 1 wherein after handshaking is established between the mobile station and the current base station, the mobile phone network is capable of specifying when the mobile station should next report its location to the mobile phone network.
- [c7] 7.The method of claim 6 wherein the mobile station is capable of reporting its battery level to the mobile phone network, and if the battery level of the mobile station is low, the mobile phone network extends the period in which the mobile station should next report its location to the mobile phone network.

[c8] 8.The method of claim 1 wherein the mobile station enters the soft power-off mode after the mobile station has been turned off if the battery of the mobile station has sufficient energy and if an International Mobile Subscriber Identity (IMSI) of the mobile station is successfully registered to the mobile phone network.